

space now to consider the subject fully ; but it may be broadly stated that methods of expressing pleasure have all arisen from habits and actions employed in self-gratification—the satisfaction of the bodily requirements—either in self-nutriments or in procreation. But they may not be the actions employed by members of the species under its present-day conditions. And in the young they would certainly not be so ; they would be the crystallised epitome, if such a term be allowed, of the habits and actions which proved successful with ancestors when they lived in a very different environment. Striking coloration of the face with ridges and scar-like markings would not now give pleasure to the sexes of the human species in their civilised condition ; but the face of the male mandril is evidence of their having done so and still doing so among monkeys, and the practice of face painting, perhaps also of tattooing among savages, is evidence of the monkey habits having been inherited by the human species, and still finding favour among its members.

In the matter of pain, the idea that the expressions which indicate it go back to ancestors living under very different conditions is excellently brought out. Expressions would be the special muscular actions performed under the stimulus of a feeling of injury—such actions as were necessary to alleviate the pain, those necessary to



FIG. 3.—A child crying.

prevent further pain, or to escape from the danger indicated by the pain, and those which were employed in revenge on the inflicter of pain, on the principle that destruction of the cause of injury would be the surest method of prevention.

Therefore, one of the first things that pain prompts an animal to do is to exhibit and prepare its weapons of offence. In the case of the human baby such weapons of offence would be those which would have been employed by the pre-human ancestors. The picture of the crying child, Fig. 3, illustrates this. The peculiar squareness of the open mouth, caused by retraction of the lips at all four corners, is on purpose to exhibit the fighting weapons, the canine teeth ; although, as a matter of fact, the canine teeth have not yet been developed. But the instinct to open the mouth so as to show canine teeth has been inherited from pre-human ancestors who habitually made use of these teeth in order to fight.

There is another feature in this picture, the tight closing of the eyes. This is to protect the eyes from injury during fighting. I photographed a cat which I pretended to strike. There was the same closing of the eyes ; and, for a similar reason, a throwing back of the ears out of harm's way ; and besides there was the paw ready to strike the assailant. I photographed another cat being teased. There was just the same opening of the mouth as in this picture of the baby, and the canine teeth, which were then disclosed, showed exactly what the cat's inten-

tions were, that they were just the same as that expressed by the throwing open the portholes, and the running out the guns which we so often used to read of in accounts of men-of-war.

The lessons which the human baby can teach as regards the past history of its race are very numerous. I have only been able to glance at some of the more important ; but they are sufficient to show that the subject is one of wide range and considerable interest.

S. S. BUCKMAN.

NOTES.

LAST Thursday a combined meeting of the Royal Society and Royal Astronomical Society took place at Burlington House, when the observers who went away for the recent eclipse communicated the results of their observations. As the reports have not yet been published, we are unable to give an account of them. We have received from Prof. Langley a preliminary account, which we hope to print next week, of the expedition which went under his direction to Wadesboro, U.S.A., to observe the eclipse. The photographs he has obtained surpass any that have ever been taken at an eclipse, and speak volumes for the employment of instruments of great focal-length.

THE new physics laboratory of Owens College, Manchester, was opened on Friday last by Lord Rayleigh. Particulars as to the ceremony and the equipment of the laboratory will appear in our issue for next week.

THE Conference on Malaria, which was to have been held under the auspices of the Liverpool School of Tropical Medicine at the end of the present month, has been postponed in order to avoid clashing with the celebration of the Centenary of the Royal College of Surgeons of England and other gatherings.

WE regret to notice the death, at Manchester, on Monday last, of Dr. Daniel John Leech, a well-known physician, and professor of *Materia Medica* and *Therapeutics* in Owens College. As chairman of the *Pharmacopœia* Committee of the Medical Council he had charge of the publishing of the last edition of the *British Pharmacopœia*, and his name had been recently mentioned as the probable president of the *British Medical Association*. Dr. Leech was in his sixty-first year.

THE death is announced of Prof. Corrado Tommasi-Crudeli, secretary of the class of mathematical, physical and natural sciences in the *Reale Accademia dei Lincei*. Tommasi commenced his career in 1859 as demonstrator of pathological anatomy at Florence, after studying with Claude Bernard, of Paris, and Duchenne. In 1862 he went to study pathology under Virchow, at Berlin ; the next year he delivered a course of lectures on pathological histology at Florence, and in 1865 he was appointed professor ordinarius of anatomy at Palermo. During an outbreak of cholera in the following year, Tommasi rendered valuable services by his study of the disease and its mode of propagation, and published a well-known memoir on the subject. In 1870, Tommasi was called to Rome, where he was first appointed head of a newly-formed department of pathological histology. Later, he carried out extensive researches on the propagation of malaria. While his researches, conducted in conjunction with Klebs, have been superseded by recent discoveries, the general conclusions to which he was led have not only been substantially confirmed, but have received their true explanation in the new doctrine of the propagation of malaria by mosquitoes.

DURING the past week the summer meeting of the Institution of Mechanical Engineers has been held in London, and proved a successful gathering, interesting not only because of the various papers read (the titles of which, excluding an additional one,

by Mr. E. Goffe, on "The Construction of 'Long Cecil,' a 47-inch Rifled Breechloading Gun in Kimberley during the Siege 1899-1900," have already been given by us), but from the fact of a number of members of the American Society of Mechanical Engineers being present. To these a most hearty welcome was accorded.

THE thirty-second annual convention of the American Society of Civil Engineers was opened on Monday last at the Institution of Civil Engineers. The proceedings were inaugurated by an address of welcome from Sir Douglas Fox, the president of the Institution of Civil Engineers, and the presidential address was delivered and several discussions took place.

THE Audiffret prize, of the value of 15,000 francs, has been awarded by the Academy of Moral and Political Sciences of Paris to Dr. Yersin for his discovery of the anti-bubonic serum. The prize is awarded at regular intervals for the "greatest devotion to scientific discovery."

THE Pharmaceutical Society announces that the Salters' Company Research Fellowship is now vacant. The subject of the Fellowship is chemistry considered especially in its relation to pharmacology, that is, the application of the newest methods of scientific chemistry to the elucidation of pharmacological problems. The Fellowship is of the annual value of 100*l.*, and is tenable in the Research Laboratory of the Pharmaceutical Society for one year, but may be renewed under certain conditions, and the holder is expected to devote his whole time to original investigation. Candidates need not necessarily be pharmaceutical chemists or members of the Society. The last day for receiving applications is Saturday next.

THE Balbi-Valier prize, of the value of about 120*l.*, has been awarded by the Venetian Institute of Sciences to Prof. Grassi, of Rome, for his work on the mosquito and its relation to malaria.

A PRIZE of the value of 1000 marks is offered by the Scientific Society of Danzig, in connection with its 150th anniversary, for a paper on the geology of North Germany.

THE German Society of Mechanical Engineers offers a premium of 60*l.* and a gold medal to the designer of the best system of high-speed electric railways for heavy traffic. Designs must be submitted by, at latest, October 6 next.

THE Lavoisier Monument which is being erected on the Place de la Madeleine, Paris, in close proximity to the house in which the famous chemist lived for many years, will, according to the *Chemist and Druggist*, be formally inaugurated on July 27 by the French Minister of Public Instruction. The statue has been erected by international subscription under the auspices of the Paris Academy of Sciences. The sculptor is M. Barrias, and the monument will consist of a bronze statue of Lavoisier, on a pedestal, bearing on two sides bas-reliefs showing Lavoisier working in his laboratory with Mme. Lavoisier writing under his dictation, and Lavoisier expounding the result of his experiments at a meeting of the Academy of Sciences. The scenes have been created from authentic documents.

A MONUMENT has been erected to the memory of Dr. Jean Hameau, the obscure general practitioner of the Gironde, who, in 1836, published a study on viruses, in which he partly anticipated the discoveries of Pasteur. The statue was unveiled recently at La Teste de Buch, where Hameau practised. Addresses were delivered by Dr. Laude, the Mayor of Bordeaux and President of the Medical Syndicates Union of France, Prof. Lannelongue, of Bordeaux, and others. Hameau was born in 1779, and died in 1851. His claim to be considered a precursor of Pasteur has been publicly acknowledged by Prof. Grancher,

and it is probable that had he been possessed of the laboratory accommodation and means of investigation available at the present day, the microbe theory of disease would have been established fifty years sooner than it was.

PROF. H. F. OSBORN, of Columbia University and the American Museum of Natural History, has, according to *Science*, been invited to succeed the late Prof. Cope as vertebrate palæontologist of the Geological Survey of Canada.

MR. W. E. D. SCOTT, curator of the ornithological department in Princeton, announces, says *Science*, that the British Museum has presented to the University two thousand mounted birds, specimens from India, Australia and the Malay Islands. Some time ago the University presented the British Museum with 250 sets of North American birds' eggs.

It is announced that the repairs to the Arctic steamer *Windward* have now been made, and the vessel was expected to sail by about July 1. The *Windward* will proceed directly, with a call at Disko, to Etah, North Greenland, Lieut. Peary's winter quarters, where instructions from him will doubtless be found, or if not, will be awaited. The vessel will take with her the maximum quantity of coal, additional lumber, oil, sugar, arms, ammunitions, provisions, scientific instruments and everything necessary for Lieut. Peary's work, including two new whale-boats, specially built at New Bedford, and thoroughly equipped in every detail. Upon the arrival of the *Windward* at Etah, Lieut. Peary will assume command, and further movements will be subjected to the conditions of his work and to his instructions. No passengers will be taken on the *Windward*, the Danish Government having qualified their permission to land at the Greenland ports, with conditions that tourists should not be carried. If Lieut. Peary has succeeded in carrying out his plans, that is to say, if he has discovered the North Pole, he will, says the *Scientific American*, return with the ship. If not, the supplies will be landed. It is possible that the *Windward* will bring back the Robert Stein party, which was landed near Cape Sabine by the *Diana* in August last.

A BOTTLE has, it is reported, been found on the shore at Roundstone, co. Galway, containing a printed card directing the finder to forward the contents to Captain Ernest André, Polar Expedition Company, Sweden, and stating that it was thrown from Major André's balloon in the Arctic regions with a view to testing the ocean currents. The bottle has been forwarded to the Board of Trade.

SETS of volumes on naval architecture, and on the history of the British Navy, have been presented by the Institution of Engineers and Shipbuilders of Scotland to Prof. Arnold, of the Sheffield Technical School, as a token of appreciation of the lecture delivered by Prof. Arnold on "The Internal Architecture of Metals."

A MEETING was held in the rooms of the Royal Meteorological Society some time ago to consider the question of a memorial to the late Mr. G. J. Symons, F.R.S., when it was resolved unanimously that the memorial should take the form of a gold medal, to be awarded from time to time by the Council of the Royal Meteorological Society for distinguished work in connection with meteorological science, and an executive committee was appointed to take the necessary steps for the raising of a fund for the purpose. The committee now appeal to the fellows and members of the societies with which Mr. Symons was associated, to the rainfall observers, and to all who have in any way benefited by his advice and assistance, to contribute to this memorial fund, which it is hoped may reach the sum of at least 750*l.* Contributions should be paid to Mr. W. Marriott,

70 Victoria Street, Westminster, S.W.; or to the "Symons Memorial Fund," Bank of England (Western Branch), Burlington Gardens, W.

AN Anti-rabic Institute for India is, says the special Indian correspondent of the *Lancet*, at last an accomplished fact. After numerous delays, Government have stepped in and practically settled the difficulties. The Royal Army Medical Corps having an officer in Major D. Semple who had studied in Paris and Lille, determined to utilise his experiences, and the annual expense for sending soldiers to Paris was diverted for the new institute. The central committee of the proposed Pasteur Institute saw their opportunity and took over its control. With a capital of 70,000 rupees and a yearly grant of 19,500 rupees, the expenses of the new institute ought to be fairly well met. Residents in India may be congratulated that at last means are provided whereby European and native patients alike can be offered the best available treatment for the terrible disease of rabies.

DR. L. SAMBON AND DR. LOW, the two medical men entrusted by the British Government with the perilous task of testing the possibility of guarding against malarial infection in the Roman Campagna, have, according to the *Lancet*, at length found a favourable place for their purpose. After rejecting various other localities as being for one reason or another unsuitable, they have selected a spot about two miles distant from Ostia, between Castel Porziana and Castel Fusano, and within five minutes' walk of the latter place. The site of their hut is on the edge of a "stagno," or swamp, forming part of the royal hunting demesne of Castel Fusano, and left undrained in order to preserve the wild boar, water fowl, &c., which frequent it. The hut will stand close to a canal containing a luxuriant growth of algae and other aquatic plants, and within a stone's throw of a clump of pine trees, which forms the outskirts of the Castel Fusano pine forest. The few dwellings near are inhabited by peasants who constantly suffer from malaria and are infested by mosquitoes of the anopheles variety. Situated thus in the heart of the swamps surrounding the mouth of a large river, among the haunts of innumerable mosquitoes of the malarial variety, and in a locality notorious as one of the most deadly of the fever-stricken centres of the Roman Campagna, this dread and unhealthy spot appears to offer ideal conditions for the carrying out of the interesting but dangerous experiment now about to be begun. The two daring investigators hope to have everything in readiness early in the present month; in the meantime, their time is profitably occupied in studying the animal and insect life of the Campagna, collecting and examining frogs, lizards, bats, spiders, mosquitoes, and the like. They have already made some interesting observations, as, for example, that although the larvæ of anopheles are at this season apparently very few, the adult mosquitoes are collected in the houses in great numbers, being especially numerous near byres and stables. The King has graciously given his consent to the erection of the hut in the royal preserves, and the municipality of Rome are doing everything in their power to help the enterprise.

THE annual general meeting of the Jenner Institute of Preventive Medicine was held on Friday last, when Dr. Macfadyen, the director, was able to state that the Institute's work had continued to progress. Among the new features added during the year were a physiological room, a room for incubating purposes, a laundry, a workshop, and a cold storage room. A Hansen apparatus for yeast culture had been presented, and considerable additions had been made to the library. Three papers were communicated to the Royal Society upon the influence of the temperature of liquid air and hydrogen upon bacterial life. Systematic investigations are being carried out in

the bacteriological department upon enteric fever, tuberculosis, and the etiology of cancer. Special investigations were carried out for public authorities during the year, e.g. upon tubercle in milk, glanders, anthrax, &c., and investigations in a number of other directions have been and are being prosecuted with vigour.

THE recent case of the Jenner Institute of Preventive Medicine v. Assessment Committee of St. George's, Hanover Square, was the means of raising once more the important question of the rateability of scientific societies. The Jenner Institute has unfortunately failed to establish its claim to exemption from the payment of rates. The Divisional Court decided that the Institute did not fulfil the conditions of the Act of Parliament exempting "any Society instituted for purposes of science, literature, or the fine arts exclusively." The preparation and sale of preventive and curative medicines was held by Mr. Justice Grantham to be the main object of the Institute, or as Mr. Justice Channell put it, "its main object was to dispense to the public the benefits of science." The Institute was not, therefore, "exclusively" devoted to the advancement of science. The Institute has, as a matter of fact, dispensed for the benefit of the public, and at a considerable loss, certain antitoxins which require the highest scientific skill in their preparation. The preparation of these substances has been at the same time a means of studying and improving the methods for producing immunity to given diseases. The aims in this respect have been of a purely scientific character, and in accordance with the main objects of the Institute, which are not, despite the Court's ruling, of a dispensing nature, except in so far as opportunity is afforded to medical men to test the value of certain antitoxins in the treatment of disease. The eminently useful aims of the Institute, which are carried out at great cost, might have been thought to bring it well within the intention of the Act, but the judicial interpretation of the word "exclusively" has formed the stumbling-block. It is to be feared that the expense of litigation may prevent the Institute from proceeding to an appeal. In any case, it is to be hoped that some steps will be taken to amend an Act, apparently devised for the benefit of scientific societies, but which, as interpreted by the Court, has little or no practical value. It is quite conceivable, as the law stands, that a claim for exemption might be defeated on the ground that a daily newspaper had been admitted to the reading-room of an institute, and that it was not, therefore, "exclusively" devoted to purposes of science.

THE annual general meeting of the Marine Biological Association was held in the rooms of the Royal Society on June 27. The council reported that arrangements had been completed for the supply of sea-water, obtained from the open sea beyond the Plymouth Breakwater, for special experiments on the rearing of sea fishes and other marine animals. Through the kindness of Mr. J. W. Woodall, the Association has had placed at its disposal a small floating laboratory, which is at present stationed at Salcombe. The periodical surveys of the physical and biological conditions prevailing at the mouth of the English Channel have been continued by Mr. Garstang at quarterly intervals for an entire year. Observations were taken at four fixed stations. They included serial temperature determinations at all depths, filtration of a definite column of water from bottom to surface with a "vertical net," and collections of the floating life at surface, mid-water and bottom, by means of a specially devised closing net. Mr. Garstang has also carried out a series of preliminary experiments on the rearing of sea-fish larvæ under different conditions, with a view to a solution of the difficulties hitherto encountered in regard to the practical work of sea-fish culture. The investigation of the fauna and

bottom deposits of the shallow water grounds in the neighbourhood of Plymouth, upon a systematic plan, has been continued during the year.

A SUCCESSFUL trip has at last been made with Count Zeppelin's navigable balloon at Friedrichshafen on Lake Constance. On Saturday evening the ascent was prevented by an explosion of one of the segments of the balloon, and a similar accident is stated to have befallen one of Count Zeppelin's benzine motors. On Sunday evening, Count Zeppelin and four others made their first ascent, and after drifting with the wind, turned and tried to make headway against it; but the wind appears to have been too strong, and the balloon was quietly lowered to the lake, where the cars floated and the occupants were brought to shore without any damage. From another telegram dated July 2 (Monday) we learn that a successful ascent was made that evening. This must have been a second attempt, and it is stated that the ship travelled safely to Immenstadt, thirty-five miles from Friedrichshafen, and landed all well.

LONDON was again visited by a sharp thunderstorm about midday on Tuesday; the rainfall and hail during the storm amounted to 0.23 inch in Westminster. The weather has continued in a very unsettled condition, but, nevertheless, the mean temperature in the neighbourhood of London for the month of June exceeded the average by about 0.05. This result has been caused chiefly by the amount of cloud which, while making the days cool, has kept the nights relatively warm. The rainfall for the month was 0.66 inch above the average, and in some parts of England it was double the average.

THE *Lancet*, quoting from a Buenos Ayres review of hygiene, entitled *La Salud*, gives some interesting particulars concerning the plague. Formerly, according to a tradition common amongst certain tribes of South American Indians, wide-spreading fires used to sweep over the land. The inhabitants were in the habit of taking refuge in caves and dens of the earth. From time to time they poked out the branch of a tree, and if this when pulled in again showed no signs of burning they considered it safe to come out. So formerly when plague ravaged and desolated various countries the inhabitants shut themselves up in the cave of isolation and did not come forth until they learned that plague had disappeared. Nowadays, however, just as the Indian tribes possess herds of horses which they did not formerly possess, and are able by these means to stamp out pampas fires, so that there is no need to take refuge in a cave, so also modern cities possess hygienic knowledge and conditions which render isolation unnecessary, and a general dissemination of plague throughout Europe and America is as impossible as a fire which should affect the whole pampas. In India and in China only those persons succumb who live under grossly unhygienic conditions. With reference to the recent outbreak of plague in Argentina, *La Salud* says, "It would be greatly to the honour of the Argentine Republic if she would invite other countries to a conference to consider the question of meeting plague, if not actually by abandoning all international action yet by leaving commerce perfectly free and by treating the disease wherever it appears exactly like any other infectious disease which assumes endemic characters."

THE annual report of Sir George Nares, F.R.S., acting conservator of the Mersey, has just been issued, and shows that considerable work has been done by the sand-pump dredgers *Brancker* and *G. B. Crow* at the Queen's Channel Bar and at certain shoals in the Queen's and Crosby Channels, at the entrance to the river. For several months the surveys show considerable improvement, many of them having no soundings less than 27 ft. below low water spring tides within the dredged cut. Though there has been slight shoaling at the outer end or

the north side of the channel, several good lines of sounding run the full length of the cut with not less than 27 ft. During the year 2,067,000 tons were dredged in Queen's Channel, 1,839,000 tons taken from shoals in that channel, and 2,735,000 tons from shoals in Crosby Channel, making a total of 6,659,000 tons, while since the commencement of the operations 45,148,860 tons of sand have been removed. The number of inward and outward bound vessels passing through Queen's Channel last year was 45,158, against 44,376 in the previous year, and 35,932 in 1893. The daily average of last year was 124 against 98 in 1893. The total using all the channels increased from 41,439 in 1893 to 50,964 in 1898, and 52,216 last year. The sand removed from the river between Liverpool and New Brighton in 1899 was 1,374,670 tons. In the same period 1,375,272 tons of silt and detritus were raised from the Manchester Ship Canal and deposited at sea.

THE idea of substituting electricity for horse-traction on canals has not been so widely developed as one would have expected to see, but some experiments of an instructive nature (*Engineering*, June 22) have been made by a German firm on behalf of the Prussian Government, wherein electric locomotives were employed for this purpose, and the mode of working may be briefly stated as follows:—A section of the Finow Canal, which forms a portion of the waterway between Berlin and Stettin, was chosen, embodying as it does physical difficulties with reverse curves, &c. On the towing-path a meter-gauge track of special design with overhead conductor was laid, on which the electric motor tows the barges; and owing to the deficiency of adhesive weight a steel rack is bolted to the permanent way, and the rack-rail system is adopted. In spite of many difficulties the experiments proved that the system was capable of meeting all requirements, and worked with apparent ease. This is very satisfactory, the more so because in one place, we are told, the line was raised 9 feet 6 inches above the towing-path with approaches of 1 in 8½ gradients. The electric motor used, we are informed, developed from 14 to 15 horse-power, much more than was necessary; but this was intentionally provided in view of further experiments to deal with the possibility of electric traction for barges of a heavier type.

IN NATURE for September 1, 1892, Prof. D. Kikuchi announced the foundation by an Imperial ordinance of an earthquake investigation committee in Japan. The objects of the committee were to study the nature of Japanese earthquakes and their distribution in time and space, to discover any means of lessening their disastrous effects, and if possible to ascertain laws by which their occurrence might be predicted. During the eight years of its existence much successful work has been done by the committee in two of these directions. They have accumulated and discussed many series of observations and records, and have conducted numerous experiments on the fracturing and overturning of columns and on the type and material of building best suited to resist a strong shock. The results are printed partly in Japanese papers; partly, we are glad to see, in their "Publications in Foreign Languages," the third and fourth numbers of which have appeared this year. If abstracts of the former could be given either in English or French, the debt we already owe to Japanese seismologists would be greatly increased.

THE Verein zur Förderung des Unterrichts in der Mathematik und den Naturwissenschaften held its annual meeting at Hamburg in the first week in June. This association, which numbers some 900 members, includes many teachers in the higher schools of Germany among its ranks, and it has taken part in the preparation of reports on physical apparatus suitable for teaching purposes. The programme included, among other subjects of papers, the teaching of geometry of position, wireless

telegraphy, experiments with liquid air, flight of birds, the International Catalogue, and the preservation of natural objects of interest in Germany.

WE are indebted to Prof. P. H. Schoute for a paper on the locus of the centre of hyperspherical curvature for the normal curve of n dimensional space. In a previous paper the author pointed out that the characteristic numbers of the locus of the centre of hyperspherical curvature are lowered if some of the points of the given rational curve lying at infinity coincide. At present Prof. Schoute traces for a special case the amount of these lower numbers, namely, for the case where the given curve is the "normal" curve of the n dimensional space in which it is situated. According to the final result, the characteristic numbers of the locus of the centre of hyperspherical curvature for the normal curve are respectively $2n-1$, $3n-3$, $4n-7$, $5n-13$, $6n-21$, ..., $2n-1$, from which it follows that they do not change if taken in reverse order.

A REPORT on dietary studies of Harvard and Yale University boat crews, conducted by Prof. W. O. Atwater and his assistant, Mr. A. P. Bryant, forms *Bulletin* No. 75 of the U.S. Department of Agriculture. These studies were undertaken primarily to secure data regarding the food requirements of men performing severe muscular work, and they lead to the conclusions that the actual food consumption of people in general is regulated more or less by the supply at their disposal and their tastes and appetites; but that it is justifiable to suppose that in a general way the difference between the food of athletes and that of other people represents a difference in actual physical need, even if neither is an accurate measure of that need. The energy of the food consumed per man per day in the dietary studies of university boat crews was found to exceed by 400 calories, or about 10 per cent. the amount found, as the average of fifteen dietary studies among college clubs in different parts of the country, while the protein in the studies of the university boat crews was 48 grams, or 45 per cent. larger in amount.

In the *Rendiconti del R. Istituto Lombardo*, Dr. Benedetto Corti briefly describes the results of a study of the Diatomaceae of the lakes of Brianza and Segrino. Of a total of eighteen species of diatoms observed in the lake of Montorfano, two (*Synedra lunaris* and *Stauroneis platystoma*) were Alpine in character, and were supposed by the author to represent the remains of a quaternary diatom flora. This view has been confirmed by a more extended study of the other lakes of Brianza and Segrino, which revealed the presence of fifteen species of diatoms peculiar to the Alpine zone out of a total of seventy-two. Of the Alpines, however, only one, viz. *Navicula firma*, was found in the lake of Sartirana. There is a decided affinity between the diatom flora of these lakes and that of the lake of Palu in the Malenco valley, and that of Poschiavo in the Engadine.

No. 17 of the "North American Fauna," now in course of publication by the Biological Division of the U.S. Department of Agriculture, is devoted to a revision of the North American voles, or "field-mice," of the genus *Microtus*, by Mr. V. Bailey. As the work is based on the examination of between 5000 and 6000 specimens, including typical representatives of every species, from more than 800 different localities, it ought to be exhaustive. The genus, which is divided into nine sub-generic groups, is taken to include no less than seventy distinct specific and sub-specific modifications, three of which are described for the first time. It is noticed that the development of oil-glands and musk-glands is most conspicuous in the aquatic members of the group, and least so in those inhabiting the driest regions. Those forms which are most exposed to light and dryness are the palest, while the deepest and

richest tones of colour are developed in those from damp and shaded localities. Attention is directed to the importance of placing every possible check on the increase of these little mammals, and of reducing their numbers when they become unusually abundant.

IN its *Bulletin* No. 12, the department just mentioned publishes a useful report, by Mr. P. S. Palmer, on the legislation for the protection of birds, other than game-birds, now in force in the United States. The author states that many insectivorous birds are still unprotected; and that the laws relating to such birds in general lack uniformity in different parts of the States; this diversity in the laws being illustrated by a map. The report closes with a digest of the bird-laws of the different States. The need of further legislation is strongly emphasised.

IN this connection may be noticed a pamphlet on the food of wild birds in this country, issued by the Yorkshire College and the Joint Agricultural Council of Leeds and the East and West Ridings. In this useful publication attention is called to the fact that birds very largely affect both sides of the farmer's balance-sheet; and that while, unfortunately, the damage they do is readily detected, the great services they render can only be appreciated by those who take pains to investigate the subject. The "pros and cons" in regard to each particular bird seem to be very fairly considered.

THE July number of the *Journal of Conchology* contains an interesting sketch of the life and career of the late Mr. Lovell Reeve, the well-known conchologist, with extracts from his diary and correspondence.

No fewer than three books dealing with the life and work of the late Prof. Huxley are being prepared at the present time. Messrs. Macmillan and Co. will issue the biography of his father by Mr. Leonard Huxley, and a volume on the professor is to be added to Messrs. Putnam's Sons' "Leaders of Science" series from the pen of Mr. P. Chalmers Mitchell; while a third work is to be contributed to Messrs. W. Blackwood and Sons' "Modern English Writers" series by Mr. Edward Clodd.

MESSRS. CHARLES GRIFFIN AND CO., LTD., have sent us the seventeenth annual issue of the "Year-Book of the Scientific and Learned Societies of Great Britain and Ireland," comprising lists of the papers read during 1894 before societies engaged in no fewer than fourteen departments of research. The serial, which is too well known to need more than a brief reference here, contains much information of service to literary and scientific men. It would be yet more valuable if the officials of certain societies, against whose entry the words "No Return" appears, could be induced to furnish the compiler with the titles of the papers presented to their respective institutions.

A NEW edition (the fifth) of "The Microtomist's Vade-Mecum," by Arthur Bolles Lee, has just been issued by Messrs. J. and A. Churchill. Considerable changes have been made in the present edition, the whole work having been very carefully revised since the last edition appeared nearly four years ago. The text has undergone condensation throughout, making it possible for much new matter to be added without increasing the size of the volume.

MORE and more space, we are glad to see, is being given in the popular magazines to articles dealing in a greater or less degree with scientific subjects, and in the monthlies for July that have reached us we notice the following contributions of this character:—In *Pearson's Magazine* Prof. Simon Newcomb explains to the lay reader in simple language, and by the aid of diagrams, "How the Planets are Weighed"; while Dr. F. A

Cook, who was attached to the Belgian Antarctic Expedition, discourses pleasantly on "The Possibilities of Reaching the Four Poles." In *Good Words* Mr. E. W. Maunder writes on "The Lords of Cold" (the title, it may be noted, is borrowed from a line in Plumptre's "Dante"), the article being a study in stellar perspective. In the same magazine is also to be found a contribution, by Mr. Aflalo, on "How Wild Creatures Feed." *Chambers's Journal* always contains at least one article of scientific interest; the present number has in it papers, entitled "Tropical Diseases and Cures" and "Alcohol from Paper and Sawdust."

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. G. A. S. Bell, R.N.; a Ring-tailed Lemur (*Lemur catta*) from Madagascar, presented by Miss M. C. Rawcliffe; a Common Duiker (*Cephalophus grimmi*, ♂) from South Africa, presented by Mr. J. E. Matcham; five Wild Cats (*Felis catus*) from Inverness-shire, presented by Mr. George J. Bailey; a Levaillant's Amazon (*Chrysolis levaillantii*) from Mexico, presented by Mr. J. Farmer Hall; a Royal Python (*Python regius*) from West Africa, presented by Mr. Benjamin Stewart; an Alpine Newt (*Molge alpestris*), nine Black Salamanders (*Salamandra atra*), two Slowworms (*Anguis fragilis*) from Switzerland, presented by the Rev. J. W. Horsley; a Common Viper (*Vipera berus*), British, presented by Mr. G. Alan Marriott; a Common Duiker (*Cephalophus grimmi*, ♀) from South Africa, a Syrian Bear (*Ursus syriacus*) from Western Asia, a Cheetah (*Cynoelurus jubatus*) from India, two Black-faced Kangaroos (*Macropus melanops*, ♂, ♀) from Tasmania, six Wrinkled Terrapins (*Chrysemys scripta rugosa*) from the West Indies, an Amboina Box Tortoise (*Cyclemmys amboinensis*) from the East Indies, five Mississippi Terrapins (*Malacoclemmys geographica*), a Prickly Trionyx (*Trionyx spinifer*) from North America, three Annulated Terrapins (*Nicoria annulata*) from Western South America, deposited; a Three-toed Sloth (*Bradypus tridactylus*) from British Guiana, purchased.

OUR ASTRONOMICAL COLUMN.

EPIHEMERIS FOR OBSERVATIONS OF EROS.—The following computed positions for July are from the ephemeris prepared by Herr F. Ristenpart (*Astronomische Nachrichten*, Bd. 152, No. 3643).

Ephemeris for 12h. Berlin Mean Time.

1900.	R.A.			Decl.
	h.	m.	s.	
July 5 ...	0	54	6.51 ...	+14 13 22.3
7 ...	0	57	27.78 ...	14 50 33.5
9 ...	1	0	48.24 ...	15 27 55.3
11 ...	1	4	7.89 ...	16 5 27.7
13 ...	1	7	26.71 ...	16 43 10.8
15 ...	1	10	44.66 ...	17 21 5.0
17 ...	1	14	1.68 ...	17 59 10.8
19 ...	1	17	17.70 ...	18 37 28.1
21 ...	1	20	32.62 ...	19 15 57.1
23 ...	1	23	46.36 ...	19 54 38.1
25 ...	1	26	58.84 ...	20 33 31.3
27 ...	1	30	9.98 ...	21 12 36.9
29 ...	1	33	19.70 ...	21 51 55.1
31 ...	1	36	27.93 ...	+22 31 26.5

MEASURES OF EROS.—*Harvard College Observatory Circular* (No. 51) contains the results of the measurements of photographs obtained during the years 1893, 1894 and 1896, giving the positions of the planet during those years. The complete discussion of the measures is being prepared for a volume of the *Observatory Annals*, but the numbers here published show that at the Harvard College Observatory there is the means of tracing the path of any object since 1890, during the times in which it was moderately bright, with nearly as great accuracy as if a

series of observations had been taken of it with a meridian circle.

TOTAL ECLIPSE OF THE SUN, MAY 28.—M. Deslandres communicates the report of his work in connection with the recent eclipse to the *Comptes rendus* (vol. cxxx. pp. 1691-1695). His programme comprised four classes of investigation:—(1) velocity of corona; (2) ultra-violet spectrum of corona and chromosphere; (3) infra-red spectrum of corona; (4) photography of corona.

Observing visually with a powerful grating spectroscope, he found by the inclination of the corona line that on the west side of the equator the corona appeared to have a more rapid speed of rotation than the disc. The photographic spectra taken for this purpose are too faint for measurement.

The ultra-violet spectra were obtained with spar quartz prismatic cameras, ten plates being obtained showing good images down to λ 3000.

The investigation of the infra-red radiation from the corona was undertaken with a view of providing a possible means of observing the corona without an eclipse, and the results would indicate that the corona is specially rich in these calorific radiations. M. Deslandres states that at his station, Argamasilla, Spain, totality was five seconds shorter than the calculated time.

THE ROYAL OBSERVATORY, GREENWICH.

IT is customary for the Astronomer Royal to present his annual report to the Board of Visitors of the Royal Observatory on the first Saturday in June, but as it is easier to transfer such a function to another date than to change the time of a total eclipse of the sun, the usual day of meeting was adjourned until June 26 last. On this day, the weather, however, did not quite come up to summer standard; but fortunately the rain held off, and the afternoon proved sufficiently fine to allow the numerous visitors to inspect the buildings and instruments. As is customary, we give below a brief *résumé* of the report.

BUILDINGS.

The building of the new observatory so near to the boundary of the grounds has necessitated an alteration in the position of the old fence, to show the building off more effectively, so that provision has been made in the Navy estimates to put the fence further away, and the plans for this are now under consideration. This building also includes the new library rooms, and we learn that the removal of the books to their new position was completed in March last. The opportunity has also been utilised for their rearrangement and for the preparation of a new catalogue, both of which, we are told, were much needed. Not only is the rearrangement of the books practically complete, but good progress has also been made with the formation of the card catalogue, a system which is to be highly recommended.

TRANSIT CIRCLE.

The sun, moon, planets, and fundamental stars have been regularly observed on the meridian as in previous years. The number of observations made from 1899 May 11 to 1900 May 10, is as follows:—

Transits, the separate limbs being counted as one observation	10,712
Determinations of collimation error	297
Determinations of level error	684
Circle observations	10,001
Determinations of nadir point (included in the number of circle observations)	674
Reflexion observations of stars (similarly included)	637

The number of stars observed in 1899 is about 5000.

An unusually large number of observations was obtained in the three months, August-October, the average number of transits observed being more than 1300 each month. From November to the date of the report, in consequence of the cloudy weather, the average has been only half this number.

The apparent correction for discordance between the nadir observations and stars obtained by reflexion for 1899 was found to be slightly larger—namely, $-0''.41$ —than that of last year, which was $-0''.36$.